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Recent and planned changes in production capacity for bauxite, alumina and aluminium

Note by the UNCTAD secretariat

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Contents

	Paragraphs
A. Introduction	1- 2
B. Definitions	3- 5
C. Summary of recent and expected developments in production capacity	6-16
1. Bauxite	7- 9
2. Alumina	10-12
3. Aluminium	13-16
D. Market outlook	17-19

Table 1 Bauxite mine capacity 1996-2001
Table 2 Alumina refinery capacity 1996-2001
Table 3 Primary aluminium smelter capacity 1996-2001

A. Introduction

1. In 1995 and 1996, the UNCTAD secretariat published notes on "Recent and planned changes in production capacity for bauxite, alumina and aluminium" (UNCTAD/COM/RDS/1 and 4 respectively). The notes were intended to provide a continuation of a similar service formerly provided by the secretariat of the International Bauxite Association (IBA), which ceased its activities at the end of 1994. The notes were distributed to the member Governments of UNCTAD, as well as to about 100 companies, institutions and individuals interested in the bauxite/alumina/aluminium industry. Readers were invited to comment on the usefulness and accuracy of the information. The replies received were all positive, and accordingly, it has been decided to continue the service for the time being on a trial basis. In order to be able to assess the usefulness of the continued regular publication of this type of note, the UNCTAD secretariat would once again welcome any comments on its scope, format and contents and usefulness. A reply form is included at the end of the note. Given the scarcity of information on the bauxite/alumina/aluminium industry in some countries, errors concerning the capacity of individual plants are unfortunately unavoidable, and the UNCTAD secretariat would accordingly be most grateful for indications of possible errors.

2. The present note uses the same format as the ones previously published. The bulk of the note consists of three tables showing capacity developments for bauxite, alumina and primary aluminium respectively during the period 1996 to 2001. The tables are based on information on production capacities and investment plans available to the UNCTAD secretariat, mainly from trade journals. A commentary on the tables is provided in section C below in summary form.

B. Definitions

3. With the exception of data for bauxite mines, capacity refers to nominal or "nameplate" capacity. While alumina refineries and primary aluminium smelters may from time to time exceed their nominal production capacities, sometimes for many consecutive years, an attempt to estimate "actual" or "real" capacities is likely to lead to inconsistencies and create confusion. In the case of bauxite mines, however, nominal capacity figures may not be very relevant, given the ease with which output can often be changed. Accordingly, bauxite mine production capacities refer to "real" capacity, as concluded from historical production figures. Capacities are expressed in thousand metric tons per year at the end of the year.

4. For bauxite mines, production capacity data refer to the gross weight (that is, not the aluminium or alumina content) of saleable products. It should be noted that the data may in some cases refer to dry weight (not including the moisture content of the material) rather than total weight, since it has not been possible to standardize the data. Data on a few mines producing non-bauxite raw materials used in alumina refineries have been included, although the capacity data are shown within parentheses and are not included in the totals. Production capacity data for alumina refineries refer to gross weight (not aluminium content) of saleable products. For aluminium, the data refer to primary aluminium in whatever form it is commercialized. Information on some production facilities which have closed as a result of war or civil disturbance has been included. Where it is unlikely that the production facility in question could be re-opened without a major reconstruction effort, its capacity is shown within parentheses and is not included in the totals.

5. Future additions to capacity have been included where there is a reasonably high probability of the investment taking place, for instance, because construction has started, financing has been secured or government approvals have been obtained. Clearly, information on projects which are not planned to enter production until late in the period is less certain. For the sake of completeness, information has also been provided on some projects which are unlikely to enter into production during the period, in which case their capacity is shown as zero.

C. Summary of recent and expected developments in production capacity

6. The following table summarizes expected capacity developments during the period 1996 to 2001.

World production capacity for bauxite, alumina and aluminium 1996-2001 (thousand metric tons per year)

Product	Capacity in 1996	Changes		
		1997	1998	1999-2001
Bauxite	137,834	1,000	1,500	13,400
Alumina	51,215	780	100	11,208
Primary aluminium	22,972	487	360	2,608

1. Bauxite

7. World bauxite capacity is estimated to have increased by 1 million tons in 1997. The only capacity expansion took place in Suriname, where the depleted Accaribo deposit was replaced by the nearby Lelydorp III deposit with a higher capacity. Other expansions that were planned have not been implemented, owing to a relatively weak market.

8. In 1998, production capacity is expected to increase by 1.5 million tons as a result of the expansion of the Boke/Sangaredi mine in Guinea.

9. Over the period from 1999 until the end of 2001, world bauxite production capacity is expected to increase by 13.4 million tons. India accounts for about half the expansion with at least one new mine. Additional mining capacity may be added in India later, since several integrated bauxite/alumina/aluminium operations are being planned in the state of Orissa. In addition, capacity at the Panchpatmali mine is expected to increase by 2.4 million tons. A new mine will be opened in 1999 in Queensland, Australia by Alcan. Capacity is expected to increase at a number of existing mines, including Huntly (6.1 million tons, replacing capacity at the Jarrahdale mine, which will be closed at the end of 1998) and Weipa in Australia (2.5 million tons) and in Jamaica, where a new mine may also be constructed early in the next century. It is also likely that there will be some expansion of bauxite production capacity in China, although exact details are not known.

2. Alumina

10. World alumina refining capacity is estimated to have increased by 780,000 tons in 1997, or by 1.5 per cent. The expansion of the Alumar refinery in Brazil accounts for more than half of this, or 400,000 tons, with the rest being made up by smaller extensions in China, India and Jamaica.

11. In 1998, production capacity for alumina is expected to increase by only 100,000 tons, accounted for by an expansion at the Damanjodi refinery in India.

12. During the period 1999-2001, alumina capacity is expected to increase by 11.2 million tons. Again, a large portion of the capacity increase (3.6 million tons) is expected to take place in India, where three new refineries are planned to enter production. In addition, capacity at the Damanjodi refinery is planned to increase further by 680,000 tons. Three more refineries, all part of integrated operations, are planned for early in the next century. Continued expansion is expected in China, where known plans would result in the addition of 790,000 tons of capacity. In Australia, capacity increases are planned at the Gladstone (0.3 million tons), Gove (0.3 million tons), Wagerup (1.3 million tons) and Worsley (1.4 million tons) refineries. In Latin America and the Caribbean, capacity expansions are planned at the Alumar refinery in Brazil (700,000 tons), the Alpart (550,000 tons), Ewarton (288,000 tons), Kirkvine (300,000 tons) and Jamalco (300,000 tons) refineries in Jamaica, and the Mantanzas refinery in Venezuela (1 million tons). Finally, capacity is planned to increase by 250,000 tons at the Pavlodar refinery in Kazakhstan.

3. Aluminium

13. In late 1997, a little more than 1 million tons of primary aluminium smelter capacity, representing 4.5 per cent of world capacity, was temporarily closed due to the market situation. In most cases, the closures were initially made in response to the earlier Memorandum of Understanding between the governments of several aluminium producing countries. Although the Memorandum of Understanding is no longer in force, market conditions have kept a large proportion of the smelters concerned from re-opening. Most of the continued cutbacks concerned smelters in the United States. Some of the capacity shut down earlier was put back in production in 1996 and 1997, particularly in Australia, France and Norway. Since information about the status of cutbacks is not available in some cases, the figures are uncertain. This is the case in particular for the Russian Federation, where production was curtailed in 1994 by an amount corresponding to an annual capacity of 326,000 tons. It is not known exactly how much of this cutback remains in force. More importantly, several other smelters, mainly in the other republics of the former USSR and in the countries formerly constituting Yugoslavia, operated at reduced capacity or were shut down due to war, civil unrest or technical problems. Total capacity was about 23.5 million tons at the end of 1997, and it is estimated that total production in the year will be slightly about 21 million tons, or about 4.5 per cent more than in 1996.

14. World production capacity is expected to have increased by 487,000 tons in 1996, or by 2.1 per cent. Two new smelters entered into production during the year, the Al Mahdi smelter in the Islamic Republic of Iran (final capacity to be 220,000 tons) and the Alscon smelter in Nigeria (final capacity 193,000 tons). Capacity was expanded at several smelters, including the Straumsvik smelter in Iceland (62,000 tons), the Årdal and Karmøy smelters in Norway (12,000 and 35,000 tons), the

Gladstone smelter in Australia (230,000 tons), the Nag Hammadi smelter in Egypt (50,000 tons) and the Alba smelter in Bahrain (17,000 tons).

15. In 1998, aluminium production capacity is expected to increase by 360,000 tons. The only new smelters expected to enter production are the Columbia Ventures Corporation's smelter in Iceland (60,000 tons) and the smelter at Qeshm (28,000 tons) in the Islamic Republic of Iran. The latter smelter, which was earlier located in Slovakia and which was closed to be replaced by a new smelter with better environmental performance, is being rebuilt at Qeshm. Most of the increase in capacity is due to completions of projects already under way, including the ones already mentioned in Nigeria and the Islamic Republic of Iran, and to expansions of existing plants. The latter include the Tomago smelter in Australia (60,000 tons) and Hindustan Aluminium's smelter at Renukoot (32,000 tons)

16. During the years 1999 to 2001, production capacity is expected to increase by 2.6 million tons. Of this, more than 1.6 million tons would be added through expansions of existing smelters in Argentina, Australia, Azerbaijan, Brazil, Cameroon, China, India, Norway, the Russian Federation, Spain, Turkey and Venezuela. China would account for about 0.5 million tons through expansions of existing capacity alone. The new smelters in the Islamic Republic of Iran and Nigeria will also reach full capacity during the period. Three new smelter projects with a combined capacity of 710,000 tons are reasonably certain to be implemented: in Chile (270,000 tons), Kuwait (200,000 tons) and Mozambique (240,000 tons). Three other projects with a total capacity of 555,000 tons may be completed before the end of the year 2001: in China (two smelters with a total capacity of 355,000 tons) and Kazakhstan (200,000 tons). Other smelter projects, including in China, India and Oman are still at a relative early stage and are less likely to be completed during the period. One smelter, at Steg in Switzerland (18,000 tons), will probably be closed in 1999.

D. Market outlook

17. Aluminium stocks decreased in both 1996 and 1997 as a result of the closures mentioned earlier and relatively strong growth in consumption in 1997. London Metal Exchange (LME) stocks decreased by 367,000 tons in 1996 and by 219,000 tons in the first nine months of 1997. Inventories of unwrought aluminium held directly by producers as reported by the International Primary Aluminium Instiute (IPAI) decreased by 305,000 tons in 1996 but did not change significantly during the first nine months of 1997. Thus, the reduction in stocks continued well into 1997, although stocks appeared to have levelled out in the second half of the year, probaly as a result both of new capacity entering into production and consumption growing at a slower rate than expected. At the end of the year, it appears that production and consumption rates are more or less in balance. Prices levelled out in 1996 after having fallen in 1995. In 1997, they increased through most of the year, reaching a peak of US$ 1,788 per ton in early August, following which they fell to levels below US$ 1,500 in December. Uncertainty about worldwide economic growth rates and the potential for rapid re-opening of the closed-down capacity may preclude any significant increases in prices in the near future, in spite of stocks being close to the level desired for operations. For the period until 2001, assuming that primary aluminium consumption increases at a rate close to the historical average, that is, an annual rate of between 2.5 and 3.5 per cent, anticipated capacity increases of 3 million tons over the same period should be sufficient to meet demand and hold prices within a relatively narrow band.

18. The alumina market has been in balance over the past two years, with prices stable at historically low levels. While anticipated additions to capacity over the next two to three years are small compared to the expected increase in demand, there is considerable potential for gradual expansion of capacity in existing refineries. Moreover, the re-opening of the St. Croix smelter in the U.S. Virgin Islands, which was largely unexpected, adds to the available capacity. In the longer term, the large capacity increases foreseen over the period 1999 to 2001are likely to be sufficient to avoid a shortfall of alumina.

19. Bauxite capacity and production are expected to grow at rates sufficient to meet the requirements of alumina refineries, in particular since major additions to capacity are expected to take place over the period 1999 to 2001.

Table 1. Bauxite mine capacity 1996-2001
(thousand metric tons per year)

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Developed countries							
North America							
United States of America							
C-E Minerals	Eufaula, Alabama	NMG	100	100	100	100	
	Andersonville, Georgia	NMG	20	20	20	20	
Cytec Industries	Andersonville, Georgia	NMG	150	150	150	150	
Harrison-Walker Refractories	Eufaula, Alabama	NMG	100	100	100	100	
Total United States, North America		**NMG**	**370**	**370**	**370**	**370**	
Europe							
Western Europe							
France							
Garrot Chaillac	Bedarieux, Hérault	NMG	200	200	200	200	
Greece							
Bauxite Delphon	Delphi	MG	600	600	600	600	
Bauxite Hell. Distomon	Distomon	MG	310	310	310	310	
Bauxite Parnasse	Delphi	MG	800	800	800	800	
		NMG	400	400	400	400	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Eleusis Bauxite	Eleusis	MG	120	120	120	120	
Total Greece		**MG**	**1830**	**1830**	**1830**	**1830**	
		NMG	**400**	**400**	**400**	**400**	
Italy							
Sarda Bauxiti	Olovedo, Sardinia	MG	350	350	350	350	
Total Western Europe		**MG**	**2180**	**2180**	**2180**	**2180**	
		NMG	**600**	**600**	**600**	**600**	
Eastern Europe							
Hungary							
Bakonyi Bauxitbanya Kft.	Bakonyi	MG	1500	1500	1500	1500	Producing at reduced rate (500-1000 ktpy) due to closures of customer refineries (Metal Bulletin, 3 March 1997, p. 5)
Romania							
State	Rosia	MG	500	500	500	500	
Russian Federation							
State	Severo-Uralsk	MG	3200	3200	3200	3200	
	Yuzhno-Uralsk	MG	500	500	500	500	
	Severo-Onezhsky	MG	1000	1000	1000	1000	
	Kola Peninsula, nepheline	MG	(1500)	(1500)	(1500)	(1500)	Bauxite equivalent=825,000 tons
	Caucasus, alunite	MG	(4200)	(4200)	(4200)	(4200)	Bauxite equivalent=2,310,000 tons
Total Russian Federation		**MG**	**4700**	**4700**	**4700**	**4700**	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Total Eastern Europe		**MG**	**6700**	**6700**	**6700**	**6700**	
Australia							
Alcan	Ely, Queensland	MG	0	0	0	2500	Construction began in 1997, the mine will be completed in 1999; expanded later to 3500 ktpy (Metal Bulletin, 13 March 1997, p. 11; 8 September 1997, p. 5)
Alcoa World Alumina (Alcoa 60 %, Western Mining Corporation 40 %)	Del Park	MG	6000	6000	6000	6000	
	Huntly	MG	11900	11900	11900	18000	Production to be expanded to compensate for closure of Jarrahdale (Mining Journal, 27 June 1997, p. 509)
	Jarrahdale	MG	6800	6800	6800	0	To be closed due to high costs; Closure process to start at end of 1998 (Mining Journal, 27 June 1997, p. 509)
	Willowdale	MG	6100	6100	6100	6100	
Comalco	Weipa	MG	11050	11050	11050	13550	Feasibility study of construction of an alumina refinery at the site under way (Metal Bulletin, 29 June 1995); upgrade to reduce costs planned (Metal Bulletin, 30 October 1995)
		NMG	250	250	250	250	
Nabalco Pty. Ltd.	Gove	MG	6750	6750	6750	6750	
		NMG	250	250	250	250	
Worsley Alumina Pty. Ltd.	Mt. Saddleback	MG	7000	7000	7000	7000	
Total Australia		**MG**	**55600**	**55600**	**55600**	**59900**	
		NMG	**500**	**500**	**500**	**500**	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Total developed countries		**MG**	**64480**	**64480**	**64480**	**68780**	
		NMG	**1470**	**1470**	**1470**	**1470**	
Developing countries							
America							
Brazil							
Alcan	Ouro Preto	MG	485	485	485	485	
Alcoa	Poços de Caldas	MG	750	750	750	750	
CBA	Poços de Caldas	MG	600	600	600	600	
	Cataguazes	MG	500	500	500	500	
Cia. Brasileira de Bauxita	Paragomina, Pará	NMG	20	20	20	20	
CVRD/Paraibuna	North Pará	NMG	100	100	100	100	
Finapa	Bahía	NMG	140	140	140	140	
Mineração Curimbaba Ltda.	Poços de Caldas	NMG	244	244	244	244	
MRN	Trombetas	MG	9600	9600	9600	9600	Second mine face to be opened, will facilitate possible later expansion to 12 or 13 Mtpy (Metal Bulletin, 1 April 1996, p. 11)
MSL Minerais SA	Caracuru, Pará	NMG	200	200	200	200	
Total Brazil		**MG**	**11935**	**11935**	**11935**	**11935**	
		NMG	**704**	**704**	**704**	**704**	
Guyana							
Bermine	Berbice/Mackenzie	MG	150	150	150	150	Privatization planned (Metal Bulletin, 27 March 1997, p. 6)
		NMG	150	150	150	150	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Linmine/Alcan	Linden	NMG	200	200	200	200	Production has contracted over the past several years, privatization planned (Mining Journal, 6 September 1996, p. 10)
Reynolds/Bidco	Aroaima	MG	1500	1500	1500	1500	
Total Guyana		**MG**	**1650**	**1650**	**1650**	**1650**	
		NMG	**350**	**350**	**350**	**350**	
Jamaica							
Alpart	Nain	MG	5000	5000	5000	5000	
Jamalcan	Schwellenburg	MG	1300	1300	1300	1300	
	Kirkvine	MG	1300	1300	1300	1600	
Jamalco	Mocho Mountain	MG	2500	2500	2500	3000	
Kaiser Jamaica Bauxite Co.	St. Ann/Discovery Bay	MG	4500	4500	4500	4500	
State	Trelawny	MG	0	0	0	0	Feasibility study to be completed in 1997 (Metal Bulletin, 28 April 1997, p. 5)
Total Jamaica		**MG**	**14600**	**14600**	**14600**	**15300**	
Suriname							
Gencor/Alcoa	Lelydorp/Accaribo	MG	1000	2000	2000	2000	Accaribo depleted in 1997, production to shift to the Lelydorp III deposit, mined at a higher rate (Mining Journal, 1 November 1996, p. 7)
Alcoa	Coirmotibo	MG	2000	2000	2000	2000	
Total Suriname		**MG**	**3000**	**4000**	**4000**	**4000**	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Venezuela							
Bauxilum	Los Pijiguaos	MG	4000	4000	4000	6000	Earlier Bauxiven, new company formed through merger of bauxite and alumina operations, privatization planned (Platt's Metals Week, 25 August 1997, p. 5)
Total America		**MG**	**35185**	**36185**	**36185**	**38885**	
		NMG	**1054**	**1054**	**1054**	**1054**	
Africa							
Ghana							
Ghana Bauxite	Awaso	MG	400	400	400	400	
Guinea							
CBG	Boke/Sanagaredi	MG	12000	12000	13500	13500	
		NMG	150	150	150	150	
Friguia	Fria-Kimbo	MG	2150	2150	2150	2150	
OBK	Kindia	MG	3000	3000	3000	3000	Output has been below capacity, but a rehabilitation programme will raise it (Metal Bulletin, 11 April 1996, p. 11)
State	Dian-Dian	MG	0	0	0	0	Planned capacity 11 Mtpy, to be followed by refinery and smelter at same location (Metal Bulletin, 11 April 1996, p. 11)
Total Guinea		**MG**	**14150**	**14150**	**15650**	**15650**	
		NMG	**150**	**150**	**150**	**150**	
Mozambique							
E.C. Meikle Plc.	Manica	NMG	10	10	10	10	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Sierra Leone							
Sierra Leone Ore & Metal Co.	Mokanji-Gondama	MG	1200	1200	1200	1200	Mine closed down in January 1995 as a result of civil unrest (Mining Journal, 30 May 1997, p. 427)
Total Africa		**MG**	**15750**	**15750**	**17250**	**17250**	
		NMG	**160**	**160**	**160**	**160**	
Asia							
Azerbaijan							
Zaglik Alunite Mining Dir.	Zaglik, alunite	MG	(500)	(500)	(500)	(500)	Bauxite equivalent=170,000 tons
China							
China National Nonferrous Metal Corporation (CNNC) and provincial governments	various	MG	5500	5500	5500	6500	
		NMG	750	750	750	750	
India							
Bharat Aluminium Co.	Mainper, Madhya Pradesh	MG	400	400	400	400	
	Bhuj	NMG	100	100	100	100	
Gimpex Minerals	Renukoot, Uttar Pradesh	MG	600	600	600	600	
Gujarat Mineral Development Corp.	Kutch/Saurashtra, Gujarat	NMG	500	500	500	500	
Hindustan Aluminium Co.	Lohardfaga, Bihar	MG	225	225	225	225	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
	Kodngamali-Pottangi, Orissa	MG	0	0	0	0	Integrated project with capacity of 2000-2500 ktpy to be completed in 2002-2003; leases for the bauxite deposits to be bought from Orissa Mining Corp. (Mining Journal, 4 April 1997, p. 267)
Indian Aluminium Co.	Kolhapur, Maharashtra	MG	480	480	480	480	
	Belgaum, Karnataka	MG	400	400	400	400	
	Ranmchi, Bihar	MG	200	200	200	200	
Madras Aluminium Co.	Mettur, Tamil Nadu	NMG	100	100	100	100	
National Aluminium Co.	Panchpatmali	MG	2400	2400	2400	4800	Expansion project approved (Metal Bulletin, 14 April 1997, p. 9)
Prabhudas	Jamnagar	NMG	30	30	30	30	
Utkal Alumina International Pvt. Ltd.	Baphlimali, Orissa	MG	0	0	0	3000	Joint venture between Indian Aluminium Co., Tata Industries, Hydro and Orissa Mining Corp., to feed new refinery (Mining Journal, 30 June 1995)
Total India		**MG**	**4705**	**4705**	**4705**	**10105**	
		NMG	**730**	**730**	**730**	**730**	
Indonesia							
Aneka Tambang	Bintan	MG	1300	1300	1300	1300	
Iran (Islamic Reublic of)							
State	Jajrum	MG	100	100	100	100	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Kazakhstan							
State	Turgay	MG	1300	1300	1300	1300	
	Krasnooktyabrsk	MG	1700	1700	1700	1700	
	Nepheline mine	MG	n.a.	n.a.	n.a.	n.a.	
Total Kazakhstan		**MG**	**3000**	**3000**	**3000**	**3000**	
Malaysia							
Johore Mining and Stevedoring Co.	Bukit Pasat, Johore	MG	800	800	800	800	
		NMG	200	200	200	200	
Saudi Arabia							
State	Az Zabirah	MG	0	0	0	0	Mine would supply alumina refinery that may be constructed (Metal Bulletin, 27 March 1997, p. 5; Platt's Metals Week, 9 May 1994, p. 10)
Turkey							
Etibank	Seydisehir/Bolkardag	MG	400	400	400	400	
		NMG	200	200	200	200	
Total Asia		**MG**	**15805**	**15805**	**15805**	**22205**	
		NMG	**1880**	**1880**	**1880**	**1880**	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Europe							
Bosnia and Herzegovina							
Energoinvest	Mostar	MG	(460)	(460)	(460)	(460)	The mine ceased production in 1992 and has been damaged by the hostilities (Mining Journal, 31 March 1995)
	Vlasenica	MG	1000	1000	1000	1000	Believed to be operating on a limited basis (Metal Bulletin Monthly, February 1994)
	Jajce	MG	(300)	(300)	(300)	(300)	Closed due to closure of Mostar refinery (Metal Bulletin Monthly, February 1994)
Total Bosnia and Herzegovina		**MG**	**1000**	**1000**	**1000**	**1000**	
Croatia							
Jadral	Obrovac	MG	(300)	(300)	(300)	(300)	Closed due to the war
Pomgrad	Imotski	MG	50	50	50	50	
Total Croatia		**MG**	**50**	**50**	**50**	**50**	
Yugoslavia							
Grebnik	Klina, Kosovo	NMG	(100)	(100)	(100)	(100)	Closed due to the war
Kombinat Aluminijum Titograd-Niksic	Niksic	MG	1000	1000	1000	1000	The mine is still operating, although exports, which were earlier substantial, have ceased as a result of sanctions (Metal Bulletin Monthly, February 1994)
Total Europe		**MG**	**2050**	**2050**	**2050**	**2050**	

Country/company	Location	Bauxite type[a]	Capacity 1996	1997	1998	2001	Comments
Total developing countries		**MG**	**68790**	**69790**	**71290**	**80390**	
		NMG	**3094**	**3094**	**3094**	**3094**	
Total world		**MG**	**133270**	**134270**	**135770**	**149170**	
		NMG	**4564**	**4564**	**4564**	**4564**	

Sources: Trade journals

[a] MG=Metallurgical grade; NMG=Non-metallurgical grade.

Table 2. Alumina refinery capacity 1996-2001

(thousand metric tons per year)

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
Developed countries							
North America							
Canada							
Alcan	Vaudreuil, Québec	MG	1075	1075	1075	1075	
		NMG	100	100	100	100	
United States of America							
Alcoa	Point Comfort, Texas	MG	1450	1450	1450	1450	
		NMG	340	340	340	340	
	St. Croix, U.S. Virgin Islands	MG	600	600	600	600	Closed temporarily in early 1995 due to market situation; bought by Alcoa in July 1995; to be restarted before end 1997 (Platt's Metals Week, 27 October 1997, p.5)
Kaiser	Gramercy, Lousiana	MG	800	800	800	800	
		NMG	200	200	200	200	
Ormet	Burnside, Louisiana	MG	600	600	600	600	
Reynolds	Corpus Christi, Texas	MG	1600	1600	1600	1600	Production cut back by 250 ktpy in 1996, still cut back in 1997 (Metal Bulletin, 11 July 1996, p. 5; 23 October 1997, p. 3)
		NMG	200	200	200	200	
Total United States of America		**MG**	**5050**	**5050**	**5050**	**5050**	
		NMG	**740**	**740**	**740**	**740**	
Total North America		**MG**	**6125**	**6125**	**6125**	**6125**	
		NMG	**840**	**840**	**840**	**840**	

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
Europe							
Western Europe							
France							
Pechiney	Gardanne	MG	410	410	410	410	
		NMG	300	300	300	300	
Germany							
Aluminium-Oxid Stade	Stade	MG	670	670	670	670	
Elektrochemisches Kombinat	Lauta	NMG	60	60	60	60	
Lonza-Werke	Bergheim	MG	100	100	100	100	
		NMG	250	250	250	250	
Total Germany		**MG**	**770**	**770**	**770**	**770**	
		NMG	**310**	**310**	**310**	**310**	
Greece							
Aluminium de Grèce	Distomon	MG	640	640	640	640	
Ireland							
Aughinish Alumina Ltd.	Aughinish	MG	1100	1100	1100	1100	
Italy							
Eurallumina Spa.	Porto Vesme	MG	820	820	820	820	
		NMG	30	30	30	30	
Spain							
Alcoa	San Ciprian	MG	1000	1000	1000	1100	Capacity may be expanded by 300 ktpy (Metal Bulletin, 20 June 1996, p. 13; 14 July 1997, p. 3)
United Kingdom							
Alcan	Burntisland, Scotland	NMG	120	120	120	120	

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
Total Western Europe		**MG**	**4740**	**4740**	**4740**	**4740**	
		NMG	**760**	**760**	**760**	**760**	
Eastern Europe							
Hungary							
Altus-GPS	Motim	NMG	75	75	75	75	Operating at reduced output (Platt's Metals Week, 6 June 1994); privatized in 1996 (Metal Bulletin, 1 February 1996)
Inotai Aluminium Kft	Ajka	MG	300	300	300	300	Operating at a rate of 200 ktpy in 1997 (Platt's Metals Week, 5 May 1997, p. 11; 90 per cent privatized in 1997 (Metal Bulletin, 12 June 1997, p. 12)
	Almásfüzitö	MG	350	350	350	350	Closed in November 1994, re-opened in December 1995, privatized in late 1996, closed down in early 1997, uncertain if it will re-open (Metal Bulletin, 24 March 1997, p. 5)
Total Hungary		**MG**	**650**	**650**	**650**	**650**	
		NMG	**75**	**75**	**75**	**75**	
Romania							
Balli Metal	Tulcea	MG	400	400	400	600	Partly privatized (51 %), majority purchased by Balli and Bayraktar in 1996 (Metal Bulletin Monthly, September 1997, pp. 53-57)
State	Crisana	MG	250	250	250	250	
Total Romania		**MG**	**650**	**650**	**650**	**650**	
Russian Federation							
Achinsk Alumina	Achinsk	MG	900	900	900	900	Output has been around half of capacity but is increasing (Metal Bulletin, 17 February 1997, p. 5)
Pikalevo Alumina	Pikalevo	MG	260	260	260	260	
Tikhvin Alumina	Boksitogorsk	MG	200	200	200	200	
Ural Aluminium Co.	Bogoslovsk	MG	900	900	900	900	
Ural Aluminium Co.	Kamensk	MG	500	500	500	500	
Volkhov Aluminium	Volkhov	MG	40	40	40	40	
Total Russian Federation		**MG**	**2800**	**2800**	**2800**	**2800**	

Country/company	Location	Alumina type[a]	Capacity 1996	19967	1998	20001	Comments
Slovakia							
ZSNP	Ziar-nad-Hronom	MG	65	65	65	65	
Ukraine							
Nikolaev Alumina	Nikolaev	MG	1000	1000	1000	1000	28 per cent to be privatized (Metal Bulletin, 4 September 1997, p. 25)
Total Eastern Europe		**MG**	**5165**	**5165**	**5165**	**5165**	
		NMG	**75**	**75**	**75**	**75**	
Australia							
Alcoa World Alumina	Kwinana	MG	1900	1900	1900	1900	
(Alcoa 60%, Western		NMG	200	200	200	200	
Mining Corporation 40 %)	Pinjarra	MG	3100	3100	3100	3100	
	Wagerup	MG	1700	1700	1700	3000	Government approval for expansion sought (Metal Bulletin Monthly, September 1995)
Australia Fused Material	Doral	NMG	20	20	20	30	
Nabalco Pty. Ltd.	Gove	MG	1700	1700	1700	2000	
Queensland Alumina Ltd.	Gladstone	MG	3300	3300	3300	3600	
Worsley Alumina Pty. Ltd.	Worsley	MG	1700	1700	1700	3100	Expansion to be completed in the year 2000 (Platt's Metals Week, 15 September 1997, p.1)
Total Australia		**MG**	**13400**	**13400**	**13400**	**16700**	
		NMG	**220**	**220**	**220**	**230**	
Japan							
Nippon Light Metal	Shimizu	MG	215	215	215	215	
		NMG	200	200	200	200	
Showa Light Metal	Yokohama	NMG	275	275	275	275	
Sumitomo Chemical	Kikumoto	NMG	220	220	220	220	
Total Japan		**MG**	**215**	**215**	**215**	**215**	
		NMG	**695**	**695**	**695**	**695**	

Country/company	Location	Alumina type[a]	1996	1997	1998	2001	Comments
Total developed countries		**MG**	**29645**	**29645**	**29645**	**32945**	
		NMG	**2590**	**2590**	**2590**	**2600**	
Developing countries							
America							
Brazil							
Alcan	Saramenha	MG	150	150	150	150	
Alcoa	Poços de Caldas	MG	180	180	180	180	
		NMG	170	170	170	170	
Alumar	São Luis	MG	1000	1400	1400	2100	Capacity to be increased with additional production intended for exports (American Metal Market, 1 February 1996)
Alunorte	Belem	MG	1200	1200	1200	1300	The refinery started production in September 1995 and reached present operating rate in early 1997 (Metal Bulletin, 15 September 1997, p. 9)
C B A	Mairinque	MG	440	440	440	440	
Total Brazil		**MG**	**2970**	**3370**	**3370**	**4170**	
		NMG	**170**	**170**	**170**	**170**	
Jamaica							
Alpart	Nain	MG	1450	1450	1450	2000	Capacity expansion would take place without increase in workforce (Mining Journal, 8 March 1996, p. 174)
Jamalcan	Ewarton	MG	560	560	560	848	Capacity to reach 725 ktpy in 2000 (Metal Bulletin, 27 March 1997, p. 648)
	Kirkvine	MG	548	548	548	848	
		NMG	15	15	15	15	
Jamalco	Woodside	MG	850	900	900	1200	
State	Trelawny	MG	0	0	0	0	Feasibility study for 1 Mtpy refinery to be completed in 1997 (Metal Bulletin, 28 April 1997, p. 5)
Total Jamaica		**MG**	**3408**	**3458**	**3458**	**4896**	
		NMG	**15**	**15**	**15**	**15**	

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
Suriname							
Billiton/Alcoa	Paranam	MG	1530	1530	1530	1530	
		NMG	120	120	120	120	
Venezuela							
Bauxilum	Mantanzas	MG	2000	2000	2000	3000	Earlier Interalumina, new company formed through merger of bauxite and alumina operations, privatization planned (Platt's Metals Week, 25 August 1997, p. 5)
Total America		**MG**	**9908**	**10358**	**10358**	**13506**	
		NMG	**305**	**305**	**305**	**305**	
Africa							
Guinea							
Friguia	Fria	MG	700	700	700	700	Output in recent years has been about 640 ktpy (Metal Bulletin, 11 April 1996, p. 11)
Asia							
Azerbaijan							
Gyandzha Alumina Association (formerly Kirovabad Aluminium)	Gyandzha	MG	400	400	400	400	Production came to a halt in 1997 due to financial and energy supply problems, production during the year was about 10,000 tons (Platt's Metals Week, 27 October 1997, p. 6)
China							
China Great Wall Aluminium Corp.	Zhengzhou	MG	800	800	800	800	
	Zhongzhou	MG	200	200	200	600	Construction of the plant was completed in 1995, capacity expansion to be financed by issuing shares to foreign investors (Platt's Metals Week, 1 April 1996, p. 12; 22 July 1996, p. 9)
China National Nonferrous Metal Corporation (CNNC) and provincial governments	Guiyang, Guizhou	MG	400	400	400	400	
	Heijin, Shanxi	MG	1200	1200	1200	1200	
	Nanning, Shandong	MG	560	560	560	650	

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
	Pingguo, Guanxi Zhuang	MG	100	330	330	630	Production in 1996 was 80,000 tons (Mining Journal, 31 October 1997, p. 365)
	About 150 producers	NMG	300	300	300	300	
Total China		**MG**	**3260**	**3490**	**3490**	**4280**	
		NMG	**300**	**300**	**300**	**300**	
India							
Bharat Aluminium Co.	Korba, Madhya Pradesh	MG	200	200	200	200	
Gujarat Mineral Development Corporation, Gujarat Alkali and Chemicals Ltd., Raytheon Corp.	Kutch, Gujarat	MG	0	0	0	750	To be completed in 1999, Raytheon would be main owner (Platt's Metals Week, 16 June 1997, p. 15; 20 October 1997, p. 16)
Hindustan Aluminium Co.	Renukoot, Uttar Pradesh	MG	350	450	450	450	
		MG	0	0	0	0	Integrated project with 1000 ktpy refinery to be completed in 2002-2003 (American Metal Market, 14 April 1997, p. 8; Metal Bulletin, 12 August 1996, p. 7; 7 April 1997, p. 6; 27 November 1997, p. 7)
Indian Aluminium Co.	Belgaum, Karnataka	MG	220	220	220	220	Closed down in 1992, believed to have at least partly re-opened in 1994
Indian Aluminium Co.	Muri, Bihar	MG	47	47	47	47	
		NMG	40	40	40	40	
Indian Aluminium Co./Hydro/Tata	Rengali, Orissa		0	0	0	0	Integrated project with 500 ktpy refinery to be completed by 2003-2004 (American Metal Market, 14 April 1997, p. 8; Metal Bulletin, 27 November 1997, p. 7; Platt's Metals Week, 9 December 1996, p. 5)
Larsen & Toubro/Alcoa	Kalyansinghpur, Kalahandi, Orissa	MG	0	0	0	1000	The project is at the feasibility study stage. Production would be exported (Mining Journal, 30 June 1994).
Madras Aluminium Co.	Mettur, Tamil Nadu	MG	60	60	60	60	
National Aluminium Co.	Damanjodi, Orissa	MG	800	800	900	1580	Expansion to 900 ktpy through de-bottlenecking, further expansion approved in early 1997, to be completed in 2000 (Mining Journal, 10 January 1997, p. 18; Metal Bulletin, 24 March 1997, p. 7)

Country/company	Location	Alumina type[a]	Capacity 1996	1997	1998	2001	Comments
Sterlite Industries Ltd.	Ib Valley, Orissa	MG	0	0	0	0	Integrated project with 500 ktpy refinery, possibly to be completed in late 2001 (American Metal Market, 14 April 1997, p. 8)
Utkal Alumina International Pvt. Ltd.	Koraput, Orissa	MG	0	0	0	1200	Joint venture between Indian Aluminum Co., Dubai Aluminium, Tata and Hydro, to begin production in 1999 (Metal Bulletin, 29 April 1996, p. 6)
Total India		**MG**	**1677**	**1777**	**1877**	**5507**	
		NMG	**40**	**40**	**40**	**40**	
Iran (Islamic Republic of)							
State	Jajrum	MG	50	50	50	50	
Kazakhstan							
Pavlodar Aluminium	Pavlodar	MG	1100	1100	1100	1350	White Swan of the United Kingdom holds 52 per cent since December 1994; planned upgrades will result in achievement of full capacity utilization followed by increase in capacity to 1350 ktpy (Metal Bulletin, 4 March 1996, pp. 7,9); possible that expansion will be to 2000 ktpy (Platt's Metals Week, 10 June 1996, p. 10)
Saudi Arabia							
Delmon Co.	Dubail	MG	0	0	0	0	Capacity would be 1000 ktpy, possibly using bauxite from nearby deposit, feasibility study has been completed, government is looking for partners (Metal Bulletin, 27 March 1997, p. 5)
Turkey							
Etibank	Seydisehir	MG	200	200	200	200	
Total Asia		**MG**	**6687**	**7017**	**7117**	**11787**	
		NMG	**340**	**340**	**340**	**340**	

Country/company	Location	Alumina type[a]	Capacity 1996	19967	1998	2001	Comments
Europe							
Bosnia and Herzegovina							
Energoinvest	Mostar	MG	(280)	(280)	(280)	(280)	The refinery has been closed down as a result of the war and is unlikely to re-open in the foreseeable future (Metal Bulletin, 25 January 1996, p. 6)
	Zvornik/Birac	MG	600	600	600	600	The plant is still operating, although at sharply reduced capacity (Metal Bulletin, 25 January 1996, p. 6)
Total Bosnia and Herzegovina		**MG**	**600**	**600**	**600**	**600**	
Slovenia							
UNIAL	Kidricevo	MG	110	110	110	110	The plant is currently closed (Metal Bulletin, 25 January 1996, p. 6).
		NMG	50	50	50	50	
Yugoslavia							
Kombinat Aluminijum Titograd-Niksic	Podgorica	MG	280	280	280	280	The plant operates at reduced capacity with production expected to reach 180,000 tons in 1997; privatization is planned (Metal Bulletin, 22 May 1997, p. 3).
Total Europe		**MG**	**990**	**990**	**990**	**990**	
		NMG	**50**	**50**	**50**	**50**	
Total developing countries		**MG**	**18285**	**19065**	**19165**	**27073**	
		NMG	**695**	**695**	**695**	**695**	
Total world		**MG**	**47930**	**48710**	**48810**	**60018**	
		NMG	**3285**	**3285**	**3285**	**3295**	

Sources: Trade journals

[a] MG=Metallurgical grade; NMG=Non-metallurgical grade

Table 3. Primary aluminium smelter capacity 1996-2001

(thousand metric tons per year)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Developed countries							
North America							
Canada							
Alcan	Arvida, Québec	1926	235	235	235	235	
	Beauharnois, Québec	1943	49	49	49	49	
	Grande Baie, Québec	1980	186	186	186	186	
	Isle Maligne, Québec	1943	76	76	76	76	Environmental impact study on 350 ktpy smelter to replace the existing one is being carried out (Metal Bulletin, 30 September 1996, p. 7; 20 February 1997, p. 6)
	Kitimat, British Columbia	1954	275	275	275	275	22 ktpy shut down earlier, restarted in October 1997; new 225 smelter may be constructed after the year 2000 (Platt's Metals Week, 11 August 1997, p. 12; 27 October 1997, p. 7)
	Shawinigan, Québec	1900	87	87	87	87	
	Laterriere, Québec	1990	204	204	204	204	
Aluminerie Alouette	Sept Iles, Québec	1992	218	229	229	229	Capacity to be increased during 1995 to 1998; earlier plans for doubling of capacity not to be implemented (Natural Resources Canada: Nonferrous Metals Outlook, 1995)
Aluminerie de Becancour	Becancour, Québec	1986	360	360	360	360	9 ktpy shut down earlier, restarted in October 1997 (Platt's Metals Week, 13 October 1997, p. 11)
Reynolds	Baie Comeau, Québec	1957	400	400	400	400	
Alumax	Deschambault, Québec	1992	215	215	215	215	
Total Canada			**2305**	**2316**	**2316**	**2316**	
United States of America							
Alcan	Sebree, Kentucky	1973	163	163	163	163	60 ktpy shut down in 1994, no plans for restart (Platt's Metals Week, 20 October 1997, p. 15)
Alcoa	Alcoa, Tennessee	1914	210	210	210	210	53 ktpy shut down (Light Metal Age, February 1997, p. 8)
	Badin, North Carolina	1916	115	115	115	115	56 ktpy shut down (Light Metal Age, February 1997, p. 8)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
	Massena, New York	1903	125	125	125	125	
	Rockdale, Texas	1952	315	315	315	315	143 ktpy shut down (Light Metal Age, February 1997, p. 8)
	Warrick, Indiana	1960	300	300	300	300	44 ktpy shut down, no plans for restart (Metal Bulletin, 4 August 1997, p. 14)
	Wenatchee, Washington	1952	220	220	220	220	114 ktpy shut down (Light Metal Age, February 1997, p. 8)
Alumax	Mt. Holly, South Carolina	1980	200	200	200	200	
(Eastalco)	Frederick, Maryland	1970	174	174	174	174	
(Intalco)	Ferndale, Washington	1966	280	280	280	280	
Century Aluminium	Ravenswood, West Virgina	1957	168	168	168	168	
Kaiser	Mead, Washington	1942	210	210	210	210	
	Tacoma, Washington	1942	74	74	74	74	
Montana Aluminium Investors	Columbia Falls, Montana	1955	168	168	168	168	
Noranda	New Madrid, Missouri	1971	220	220	220	220	22 ktpy shut down (Light Metal Age, February 1997, p. 8)
Northwest Aluminium	The Dalles, Oregon	1958	83	83	83	83	5.4 ktpy shut down (Light Metal Age, February 1997, p. 8)
	Goldendale, Washington	1971	168	168	168	168	Bought from Columbia Aluminum in 1996 (Platt's Metals Week, 27 May 1996, p. 11)
Ohio River Associates	Hannibal, Ohio	1958	250	250	250	250	
Reynolds	Longview, Washington	1941	204	204	204	204	47 ktpy shut down, no plans for restart (Metal Bulletin, 26 February 1996)
	Massena, New York	1953	123	123	123	123	41 ktpy shut down, no plans for restart (Metal Bulletin, 26 February 1996)
	Troutdale, Oregon	1942	121	121	121	121	Smelter closed down since December1991 (American Metal Market, 17 August 1993); no plans for restart (Metal Bulletin, 26 February 1996)
Southwire	Hawesville, Kentucky	1969	186	186	186	186	17 ktpy output reduction; expansion of 50 ktpy considered, expansion contingent on power costs and environmental permits (Light Metal Age, February 1997, p. 8; Platt's Metals Week, 21 October 1996, p. 4)
Vanalco	Vancouver, Washington	1940	116	116	116	116	28.75 ktpy shut down (Light Metal Age, February 1997, p. 8)
Total United States of America			**4040**	**4040**	**4040**	**4040**	
Total North America			**6345**	**6356**	**6356**	**6356**	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Western Europe							
France							
Pechiney	Lannemezan	1939	45	45	45	45	12 ktpy shut down earlier restarted in 1997/98 (Platt's Metals Week, 22 September 1997, p. 11)
	St. Jean de Maurienne	1986	125	125	125	125	12 ktpy shut down earlier restarted in 1997/98 (Platt's Metals Week, 22 September 1997, p. 11)
	Dunkerque	1992	215	215	215	215	22 ktpy shut down earlier restarted in 1966 (Metal Bulletin, 13 March 1997, p. 9)
Total France			**385**	**385**	**385**	**385**	
Germany							
Aluminium Essen GmbH	Essen	1970	135	135	135	135	45 ktpy shut down (Light Metal Age, February 1997, p. 9)
Hamburger Aluminium	Hamburg	1973	125	125	125	125	4 ktpy shut down (Light Metal Age, February 1997, p. 9)
Hoogovens Aluminium	Voerde	1972	80	80	80	80	
Vereinigte	Norf (Rheinwerk)	1963	210	210	210	210	
Aluminiumwerke (VAW)	Stade (Elbwerk)	1973	70	70	70	70	
	Tögingen (Innwerk)	1925	30	0	0	0	Closed February 1996 (Metal Bulletin, 15 January 1996, p. 6)
Total Germany			**650**	**620**	**620**	**620**	
Greece							
Aluminium de Grece	Distomon	1966	153	153	153	153	About 30 ktpy shut down earlier, coming back into production gradually with 1997 production expected to be 140,000 tons (Platt's Metals Week , 23 June 1997, p. 7)
Iceland							
Isal	Straumsvik	1969	100	162	162	162	Expansion completed in mid-1997 (Platt's Metals Week, 13 October 1997, p. 12)
Columbia Ventures Corp.			0	0	60	60	Smelter to be in production in June 1998, output will eventually increase to 180 ktpy (Platt's Metals Week, 18 August 1997, p. 4)
Total Iceland			**100**	**162**	**222**	**222**	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Italy							
Alcoa	Fusina	1971	40	40	40	40	
	Porto Vesme	1972	135	135	135	135	
Total Italy			**175**	**175**	**175**	**175**	
Netherlands							
Aluminium Delfzijl	Delfzijl	1966	98	98	98	98	Investment being undertaken to meet environmental and health rules; will ensure that smelter, which was planned to close in 2006, remains open (Mining Journal, 23 February 1996, p. 142)
Pechiney Nederlands	Vlissingen	1971	175	175	175	175	37 ktpy shut down earlier restarted in 1997/98 (Platt's Metals Week, 22 September 1997, p. 11)
Total Netherlands			**273**	**273**	**273**	**273**	
Norway							
Hydro Aluminium	Årdal	1946	185	197	197	240	13 ktpy shut down earlier back in production, expansion to be completed in 1997 (Light Metal Age, February 1997, p. 9; Metal Bulletin Monthly, September 1997, p. 41; Platt's Metals Week, 28 July 1997, p. 1)
	Høyanger	1915	71	71	71	71	9 ktpy shut down earlier back in production (Light Metal Age, February 1997, p. 9; Platt's Metals Week, 28 July 1997, p. 1)
	Karmøy	1967	232	267	267	267	14 ktpy shut down earlier back in production, expansion to be completed in 1997 (Light Metal Age, February 1997, p. 9; Metal Bulletin Monthly, September 1997, p. 41; Platt's Metals Week, 28 July 1997, p. 1)
	Sunndalsøra	1954	140	140	140	140	8 ktpy shut down earlier back in production (Light Metal Age, February 1997, p. 9; Platt's Metals Week, 28 July 1997, p. 1)
Mosjøen Aluminium	Lista	1971	80	80	90	90	10 ktpy shut down (Light Metal Age, February 1997, p. 9)
	Mosjøen	1958	120	120	120	120	5 ktpy output reduction; expansion to 155 ktpy considered (Metal Bulletin, 20 April 1995, p. 16)
Sør Norge Aluminium	Husnes	1965	110	110	110	110	14 ktpy shut down earlier back in production (Light Metal Age, February 1997, p. 9; Platt's Metals Week, 28 July 1997, p. 1)
Total Norway			**938**	**985**	**995**	**1038**	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Spain							
Alcoa	San Ciprian	1979	200	200	200	222	Upgrading project will increase capacity through raised efficiency; Alcoa purchased all three Spanish smelters in 1997 (Metal Bulletin, 14 July 1997, p. 3; 15 September 1997, p. 15)
	La Coruña	1961	79	79	79	79	
	Aviles	1959	83	83	83	83	
Total Spain			**362**	**362**	**362**	**384**	
Sweden							
Gränges Aluminium	Sundsvall	1943	100	100	100	100	Gränges became an independent company in 1997, as shares were sold by former owner Electrolux on the Stockholm stock exchange (Metal Bulletin, 1 May 1997, p. 3)
Switzerland							
Alusuisse	Steg	1962	18	18	18	0	Two thirds of the original capacity of 50,000 tons per year were closed down permanently in late 1994. The final third is to be closed at the end of 1999 unless more favourable power contracts can be obtained (Metal Bulletin, 23 October 1997, p.5)
United Kingdom							
Alcan	Kinlochleven	1907	11	11	11	11	
	Lochabar	1982	40	40	40	40	
	Lynemouth	1972	140	140	140	140	75.5 ktpy shut down since 1991, no plans for restart (Platt's Metals Week, 20 October 1997, p. 15)
	Invergordon		0	0	0	0	Closed since 1982, re-opening has been discussed.
Anglesey Aluminium	Holyhead	1971	128	128	128	128	
Total United Kingdom			**319**	**319**	**319**	**319**	
Total Western Europe			**3473**	**3552**	**3622**	**3687**	
Eastern Europe							
Hungary							
Magyar Aluminium	Inota	1950	34	34	34	34	Privatized 1996 (Mining Journal, 2 February 1996, p. 87)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Poland							
Impex Metal	Konin	1965	50	50	50	50	
Romania							
Alro Slatina	Slatina	1964	160	160	160	160	To be privatized in 1997 (Platt's Metals Week, 8 September 1997, p. 12)
Russian Federation							
Kandalakshii Aluminium	Kandalaksha	1951	70	70	70	70	
Krasnoyarsk Aluminium	Krasnoyarsk	1964	810	810	810	810	70 ktpy shut down (Light Metal Age, February 1997, p. 9)
Nadvoitsy Aluminium	Nadvoitsy	1954	70	70	70	70	
Sibir-Urals Aluminium	Bogoslovsk (Krasnoturinsk)	1945	150	150	150	150	20 ktpy shut down (Light Metal Age, February 1997, p. 9)
	Irkutsk (Shelekhovo)	1962	280	280	280	280	30 ktpy shut down (Light Metal Age, February 1997, p. 9)
	Kamensk	1939	100	100	100	100	40 ktpy shut down (Light Metal Age, February 1997, p. 9)
Trans-World	Bratsk	1966	814	814	814	850	Operating at about 780 ktpy, expansion to take place in two stages (American Metal Market, 7 March 1997, p. 1; Mining Journal, 6 September 1996, p. 180)
Trans-World	Novokuznetsk	1943	275	275	275	318	25 ktpy shut down temporarily (Light Metal Age, February 1997, p. 9); upgrading project in cooperation with VAW delayed but may be completed in 1998/99 (Light Metal Age, February 1997, p. 18)
	Sayanagorsk	1984	350	350	350	410	Operating at 330 ktpy, expansion of 80 ktpy planned (American Metal Market, 7 March 1997, p. 1; Mining Journal, 6 September 1996, p. 180)
Volgograd Aluminium	Volgograd	1959	120	120	120	120	Modernization study carried out by Alumax (Platt's Metal Week, 10 June 1996, pp. 11-12)
Volkhov Aluminium	Volkhov	1932	20	20	20	45	10 ktpy temporarily shut down (Light Metal Age, February 1997, p. 9); reconstruction and expansion programme is planned (Metal Builetin, 15 January 1996, p. 5)
Total Russian Federation			**3059**	**3059**	**3059**	**3223**	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Slovakia							
Slovalco	Ziar-nad-Hronom	1953	110	110	110	110	Previous smelter closed down and replaced by new plant in late 1995, participation of Hydro and the EBRD (Metal Bulletin Monthly, February 1996, pp. 62-65); expansion of capacity by 30-35 ktpy considered (Metal Bulletin, 13 March 1997, p. 9)
Ukraine							
Dniepr Aluminium	Zaporozhye	1934	130	130	130	130	Smelter operating at a rate of about 95 ktpy due to environmental problems which also preclude expansion (Mining Journal, 21 June 1996, p. 483)
Total Eastern Europe			**3543**	**3543**	**3543**	**3707**	
Australia							
Capral Aluminium	Kurri, Kurri, New South Wales	1969	155	155	155	155	
Alcoa of Australia	Point Henry, Victoria	1983	180	180	180	180	25 ktpy shut down (Light Metal Age, February 1997, p. 9)
	Portland, Victoria	1986	320	320	320	345	28 ktpy shut down, expansion goes ahead as a result of agreement on power (Metal Bulletin, 22 September 1997, p. 5)
Boyne Smelters Ltd.	Gladstone, Queensland	1982	260	490	490	490	Expansion completed in September 1997 (Metal Bulletin Monthly, September 1997, pp. 23-26)
Comalco	Bell Bay, Tasmania	1962	128	128	128	128	40 ktpy shut down earlier was restarted in 1996 (Light Metal Age, February 1997, p. 9)
Tomago Aluminium	Tomago, New South Wales	1983	380	380	440	440	14 ktpy shut down earlier restarted in 1996; expansion by 60 ktpy through upgrading of existing potlines; addition of 180 ktpy potline by 2002-2003 considered (Metal Bulletin, 13 March 1997, p. 9; 1 December 1997, p. 5)
Total Australia			**1423**	**1653**	**1713**	**1738**	
Japan							
Nippon Light Metal	Kanbara	1940	35	35	35	35	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
New Zealand							
NZ Aluminium Smelters Ltd.	Tiwai Point	1971	313	313	313	313	Capacity expansion completed in late 1996 (Metal Bulletin Monthly, September 1996, p. 9)
Total developed countries			**15132**	**15452**	**15582**	**15836**	
Developing countries							
America							
Argentina							
Aluar	Puerto Madryn	1975	186	186	186	258	Capacity expansion planned to be completed in May 1999 (Platt's Metals Week, 1 September 1997, p. 12)
Brazil							
Albrás	Belem	1985	345	345	345	387	Capacity expansion of 37 ktpy is planned, smaller expansion of 5 ktpy due to increased efficiency (Metal Bulletin, 11 September 1997, p. 6; Platt's Metals Week, 1 December 1997, p. 9)
Alcan	Aratú	1972	58	58	58	58	
	Saramenha	1945	51	51	51	51	
Alcoa	Poços de Caldas	1970	90	90	90	90	
Alumar	São Luis	1985	365	365	365	365	
CBA	Mairinque	1954	225	225	225	280	
Valesul	Santa Cruz	1982	100	100	100	100	3 ktpy shut down (Light Metal Age, February 1997, p. 8)
Total Brazil			**1234**	**1234**	**1234**	**1331**	
Chile							
Noranda	Alumysa		0	0	0	270	Project being negotiated (Platt's Metals Week, 2 June 1997)
Mexico							
Aluminio SA	Vera Cruz	1963	71	71	71	71	The plant is currently closed with no certainty of re-opening (Metal Bulletin, 7 September 1992)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Suriname							
Suralco	Paranam	1965	30	30	30	30	3 ktpy temporary output reduction from 1994, no plans for restart
Venezuela							
Alcasa	Puerto Ordaz	1967	210	210	210	210	Privatization planned, would include a fifth potline which would double capacity; expansion is awaiting government approval (Mining Journal, 12 September 1997, p. 214; Platt's Metals Week, 25 August 1997, p. 5)
Venalum	Puerto Ordaz	1978	430	430	430	456	Privatization planned (Platt's Metals Week, 25 August 1997, p. 5)
Total Venezuela			**640**	**640**	**640**	**666**	
Total America			**2161**	**2161**	**2161**	**2626**	
Africa							
Cameroon							
Alucam	Edea	1957	88	88	88	135	8 ktpy shut down (Light Metal Age, February 1997, p. 8); expansion planned to be completed by 2000 (Metal Bulletin, 29 February 1996, p. 7)
Egypt							
Egyptalum	Nag Hammadi	1975	180	230	230	230	Capacity to reach 230 ktpy in 1997, possibly 290 ktpy in 2002, due to conversion from Söderberg to prebaked anodes, 10 per cent of shares to be publicly offered in 1997 (Metal Bulletin Monthly, June 1997, p. 63; Platt's Metals Week, 7 July 1997, p. 12)
Ghana							
Volta Aluminium Co.	Tema	1967	200	200	200	200	60 ktpy shut down, of which 40 ktpy because of power shortage (Metal Bulletin, 29 February 1996, p. 6)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Mozambique							
Mozal	Maputo		0	0	0	240	Construction may start in January 1998, project to be completed by the year 2000, participation by Billiton, Industrial Development Corp. (South Africa) and International Finance Corp. (United States) (Metal Bulletin,16 October 1997, p. 5)
Nigeria							
Aluminium Smelting Company of Nigeria (Alscon)	Ikot Abasi, Akwa Ibom		0	10	100	193	Production started in October 1997 (Mining Journal, 7 November 1997, p. 383)
South Africa							
Alusaf	Richards Bay, Bayside	1971	220	220	220	220	20 ktpy shut down (Light Metal Age, February 1997, p. 9)
	Richards Bay, Hillside	1995	466	466	466	466	Production started in mid-1995. Full capacity was reached in June 1996. Half of the output will be taken up through tolling agreements (Light Metal Age, August 1996, pp. 8-21; Metal Bulletin, 8 January 1996, p7)
Total South Africa			**686**	**686**	**686**	**686**	
Total Africa			**1154**	**1214**	**1304**	**1684**	
Asia							
Azerbaijan							
SAZ	Sumgait	1955	60	60	60	110	Operating at reduced capacity (10-25 ktpy); rehabilitation and upgrade which would double capacity discussed (Metal Bulletin, 21 March 1996, p. 5; Mining Journal, 9 June 1995, p. 422)
Bahrain							
Alba	Ras Zurrayed (Knuff)	1971	480	497	497	497	Expansion project was to be completed spring 1997 (Light Metal Age, February 1997, p. 14)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
China							
China National Nonferrous Metal Corp. (CNNC) and provincial governments	Baiyin, Gansu		55	55	55	105	50 ktpy to be added before the year 2000 (Light Metal Age, February 1997, p. 14)
	Baotou, Inner Mongolia		71	71	71	71	
	Changchun, Jilin		16	16	16	16	
	Changsa, Hunan		15	15	15	15	
	Fushun, Liaoning		110	110	110	110	
	Guiyang, Guizhou		160	160	160	160	
	Jiaozuo, Henan		33	33	33	33	
	Hefei, Anhui		10	10	10	10	
	Kunming, Yunnan		40	40	40	40	
	Pingguo, Guanxi Zhuang	1994	150	150	150	150	
	Qingdao, Shandong		35	35	35	35	
	Qinghai, Xining		100	100	100	200	Capacity expansion was planned to take place in 1996 but lack of power has led to delays (Light Metal Age, February 1997, p. 14)
	Qingtongxia, Ningxia		114	114	114	214	100 ktpy to be added before the year 2000 (Light Metal Age, February 1997, p. 14)
	Sanmenxia, Henan		82	82	82	82	
	Taiyuan, Shanxi		15	15	15	15	
	Wuhan, Hupei		13	13	13	13	
	Zhengzhou, Henan		135	135	135	255	120 ktpy to be added before the year 2000 (Light Metal Age, February 1997, p. 14)
	Shanxi		0	0	0	240	New smelter, possibly with participation by Alcan, to be completed by the year 2000 (Metal Bulletin Monthly, September 1996, pp. 25, 29)
Yellow River Aluminium Industry joint venture (CNNC and Kaiser)	Lanzhou, Gansu		110	110	110	200	
	Lianhai		30	30	30	60	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Alcan/CNNC	Hejin, Shanxi		0	0	0	0	Feasibility study on 240 ktpy smelter under way (Metal Bulletin, 1 December 1997, p. 14)
Reynolds/Shanxi provincial government	Changzhi, Shanxi		0	0	0	115	New smelter to be completed by the year 2000 (Metal Bulletin Monthly, September 1996, p. 29)
Provincial governments	50 small smelters		570	570	570	570	
Total China			**1864**	**1864**	**1864**	**2709**	
India							
Bharat Aluminium Co.	Korba, Madhya Pradesh	1975	100	100	100	144	Expansion to be completed by the year 2000 (Metal Bulletin, 19 August 1996, p. 7)
Hindustan Aluminium Co.	Renukoot, Uttar Pradesh	1962	210	210	242	242	Capacity expansion to be completed in 1998 (Metal Bulletin, 18 August 1997, p. 6)
	Ib Valley, Orissa		0	0	0	0	Integrated project with 250 ktpy smelter to be completed in 2002-2003 (American Metal Market, 14 April 1997, p. 8; Metal Bulletin, 12 August 1996, p. 7, 27 November 1997, p. 7)
Indian Aluminium Co. (Indal)	Alupuram, Kerala	1943	20	20	20	20	Operating at 20 per cent of capacity in 1996 due to power shortage (Light Metal Age, February 1997, p. 9); Alcan seeks to raise its share of Indal from 40 to 51 per cent (Platt's Metals Week, 15 September 1997, p. 11)
	Belgaum, Karnataka	1969	70	70	70	70	Closed down in 1992 because of high power costs, re-opened in 1994, operating at 18 ktpy (Mining Journal, 22 September 1995, p. 214)
	Hirakud, Orissa	1959	30	30	30	60	Capacity expansion to be completed 2000-2001 (Metal Bulletin, 27 November 1997, p. 7)
Indian Aluminium Co./Hydro/Tata	Rengali, Orissa		0	0	0	0	Integrated project with 210-250 ktpy smelter to be completed by 2003-2004 (American Metal Market, 14 April 1997, p. 8; Metal Bulletin, 27 November 1997, p. 7; Platt's Metals Week, 9 December 1996, p. 5)
Madras Aluminium Co.	Mettur, Tamil Nadu	1965	6	6	6	6	25 ktpy smelter closed down in 1991, part of capacity re-opened in 1995 (Metal Bulletin, 12 August 1996, p. 7)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
National Aluminium Co.	Angul, Orissa	1987	230	230	230	230	Expansion to 350 ktpy not yet approved by government (Mining Journal, 10 January 1997, p. 18)
Sterlite Industries Ltd.	Ib Valley, Orissa		0	0	0	0	Integrated project with 250 ktpy smelter, possibly to be completed in late 2001 (American Metal Market, 14 April 1997, p. 8; Platt's Metals Week, 23 December 1996, p. 12)
Total India			**666**	**666**	**698**	**772**	
Indonesia							
P.T. Indonesia Asahan	Kuala Tanjung	1983	225	225	225	225	
Iran (Islamic Republic of)							
Al Mahdi Aluminium	Bandar Abbas	1997	0	30	110	220	Started production in May 1997 (Metal Bulletin, 24 March 1997, p. 7, 12 June 1997, p. 5)
Corp. Iralco	Arak	1972	120	120	120	120	Operated at 85 ktpy due to environmental upgrade, reached full production in 1997 (Metal Bulletin, 12 June 1997, p. 5)
Prime International	Qeshm		0	0	28	28	The smelter closed down by ZSNP in Slovakia will be rebuilt at Qeshm; capacity may be expanded to 150,000 tons in 1998 (Metal Bulletin, 15 February 1996, p. 11, 24 March 1997, p. 7)
Total Iran (Islamic Republic of)			**120**	**150**	**258**	**358**	
Kazakhstan							
Trans-World			0	0	0	200	Project to be completed in 2000, feasibility study under way (Mining Journal, 20 June 1997, p. 482)
Korea D.P.R.							
State	Chinampo		20	20	20	20	
	Pyongyang		20	20	20	20	
Total Korea D.P.R.			**40**	**40**	**40**	**40**	
Kuwait							
Kuwait Industries Co.			0	0	0	200	Government approval awaited (Metal Bulletin, 27 November 1997, p.3)

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Oman							
Sohar Aluminium Smelter Company	Sohar		0	0		0	Construction to begin in 1998, project completed in 2002/2003; construction to be carried out by part-owner CNNC of China, which will also supply alumina and buy part of the output (Metal Bulletin, 9 October 1997, p. 3)
Qatar							
Doha Aluminium	Umm Said		0	0	0	0	Plans for a 220 ktpy smelter are currently on hold (Metal Bulletin, 8 February 1996, p. 7)
Tajikistan							
TAZ	Regar	1975	520	520	520	520	Output has been significantly reduced due to alumina and power shortages caused by civil unrest; production in 1997 was expected to be just below 200,000 tons (Platt's Metals Week, 18 August 1997, p. 4)
Turkey							
Etibank	Seydisehir	1974	60	60	60	100	Expansion to 100 ktpy is planned, tender notice has been issued for upgrading, including conversion to prebaked technology; Etibank to have stake of 15 to 49 per cent (Metal Bulletin, 27 November 1997, p. 5)
United Arab Emirates							
Dubai Aluminium	Jebel Ali	1979	310	373	373	373	The expansion was completed in January 1997 (Metal Bulletin Monthly, March 1997, pp. 12-15)
Total Asia			**4345**	**4452**	**4592**	**6101**	

Country/company	Location	Start-up	Capacity				Comments
			1996	1997	1998	2001	
Europe							
Bosnia and Herzegovina							
Energoinvest	Mostar	1981	(91)	(91)	(91)	(91)	The smelter was closed down in 1992 and has been damaged by the hostilities; it is unlikely to be re-opened in the foreseeable future (Metal Bullletin, 25 January 1996, p. 6)
Croatia							
TLM	Sibenik	1973	(75)	(75)	(75)	(75)	The smelter has been severely damaged by hostilities and is unlikely to re-open in the foreseeable future (Metal Bulletin, 25 January 1996, p. 6).
Slovenia							
TGA	Kidricevo	1954	75	75	75	75	
Yugoslavia							
Kombinat Aluminijuma Titograd-Niksic	Podgorica	1972	105	105	105	105	Planned output for 1997 was 82,000 tons, privatization is considered (Metal Bulletin, 22 May 1997, p. 3)
Total Europe			**180**	**180**	**180**	**180**	
Total developing countries			**7840**	**8007**	**8237**	**10591**	
Total world			**22972**	**23459**	**23819**	**26427**	

Sources: Trade journals

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